

CLAIMS

- 1 1. A method of storing information in a database to characterize attributes outputted by different
2 classes of equipment, comprising the steps of:
 - 3 providing a database memory device;
 - 4 storing in the database memory device a plurality of attribute data records, wherein the step
5 of storing each attribute data record includes:
 - 6 storing in that record a first field identifying a class of equipment,
 - 7 storing in that record a second field identifying an attribute whose value is outputted
8 by the class of equipment identified by the first field of that record, and
 - 9 storing in that record a third field specifying an ID which the class of equipment
10 identified by the first field of that record assigns to the attribute value identified by the second field
11 of that record.
 - 1 2. The method of claim 1, wherein, for each attribute data record, the ID stored in the third field
2 uniquely specifies the attribute stored in the second field for the class of equipment stored in the first
3 field.
 - 1 3. The method of claim 1, wherein, for each attribute data record, the ID stored in the third field
2 uniquely specifies a command in response to which the class of equipment stored in the first field
3 outputs the attribute stored in the second field.
 - 1 4. The method of claim 1, wherein, for each attribute data record, the ID stored in the third field
2 uniquely specifies a command such that, in response to the class of equipment stored in the first field
3 receiving said command, said class of equipment outputs the attribute stored in the second field.
 - 1 5. The method of claim 1, wherein, for at least one attribute data record, the step of storing the
2 second field further includes the step of:
 - 3 storing a fourth field identifying a position of a chamber connected to the class of equipment

4 identified in the first field.

1 6. The method of claim 1, wherein, for each attribute data record, the first field identifies at least one
2 model of equipment.

1 7. The method of claim 1, wherein, for each attribute data record, the first field identifies at least one
2 version of equipment.

1 8. The method of claim 1, wherein, for at least one attribute data record, the step of storing the first
2 field includes:

3 storing a first subordinate field that identifies a model of equipment; and

4 storing a second subordinate field that identifies a version of the model of equipment

5 identified in the first subordinate field.

1 9. The method of claim 1, wherein, for at least one attribute data record, the step of storing the first
2 field includes:

3 storing first and second subordinate fields that collectively identify a range of versions of an
4 equipment model.

1 10. The method of claim 9, wherein the first and second subordinate fields respectively identify a
2 first version and a last version in said range of versions.

1 11. The method of claim 1, wherein, for at least one attribute data record, the step of storing the first
2 field includes:

3 storing first and second subordinate fields that collectively identify a range of revision dates
4 of an equipment model.

1 12. The method of claim 11, wherein the first and second subordinate fields respectively identify a
2 first revision date and a last revision date in said range of revision dates.

1 13. The method of claim 1, wherein the step of storing a plurality of attribute database records
2 comprises the steps of:

3 storing in the database memory a first record including said first field, wherein the first field
4 of the first record identifies a first class of equipment that includes a first model of equipment; and

5 storing in the database memory a second record including said first field, wherein the first
6 field of the second record identifies a second class of equipment that includes a second model of
7 equipment different from the first model.

1 14. The method of claim 1, wherein the step of storing a plurality of attribute database records
2 comprises the steps of:

3 storing in the database memory a first record including said first field, wherein the first field
4 of the first record identifies a first class of equipment that includes a first version of a first model of
5 equipment; and

6 storing in the database memory a second record including said first field, wherein the first
7 field of the second record identifies a second class of equipment that includes a second version of said
8 first model of equipment, the second version being different from the first version.

1 15. The method of claim 1, wherein, for at least one of the attribute data records, the attribute
2 identified in the step of storing the first field is a measurement of a process being performed in a
3 semiconductor fabrication process chamber.

1 16. The method of claim 1, wherein, for at least one of the attribute data records, the attribute
2 identified in the step of storing the first field is an operating condition of a process being performed
3 in a semiconductor fabrication process chamber.

1 17. A method of storing information in a database to characterize attributes outputted by different
2 classes of equipment, comprising the steps of:

3 providing a database memory device;

4 storing in the database memory device a plurality of attribute data records, wherein the step

5 of storing each attribute data record includes:

6 storing in that record a first field identifying a class of equipment,

7 storing in that record a second field identifying an attribute whose value is outputted

8 by the class of equipment identified by the first field of that record, and

9 storing in that record a third field specifying a conversion parameter that defines a

10 conversion of the value of the attribute identified in the second field into physical units of

11 measurement.

1 18. The method of claim 17, wherein, for at least one of the attribute data records, the conversion
2 parameter stored in the third field specifies a physical unit of measurement.

1 19. The method of claim 17, wherein, for at least one of the attribute data records, the conversion
2 parameter stored in the third field specifies a scale factor.

1 20. The method of claim 17, wherein, for at least one of the attribute data records, the conversion
2 parameter stored in the third field specifies a range of physical values.

1 21. A diagnostic apparatus for monitoring electronic equipment, comprising:

2 a computer-readable data storage device in which a plurality of data records are stored,

3 wherein each data record includes:

4 a first data field that stores data identifying a class of equipment,

5 a second data field that stores data identifying an attribute whose value is outputted

6 by the class of equipment identified by the first field of that record, and

7 a third data field that stores data specifying an ID which the class of equipment

8 identified by the first field of that record assigns to the attribute value identified by the second field
9 of that record; and

10 a computer connected to read data from the data storage device.

1 22. The apparatus of claim 21, further comprising:

2 a communications interface capable of being connected to receive data from the class of
3 equipment identified in one of the data records;

4 wherein the computer is connected to read data from the communications interface.

1 23. The apparatus of claim 21, wherein, for each attribute data record, the ID stored in the third field
2 uniquely specifies the attribute stored in the second field for the class of equipment stored in the first
3 field.

1 24. The apparatus of claim 21, wherein, for each attribute data record, the ID stored in the third field
2 uniquely specifies a command in response to which the class of equipment stored in the first field
3 outputs the attribute stored in the second field.

1 25. The apparatus of claim 21, wherein, for each attribute data record, the ID stored in the third field
2 uniquely specifies a command such that, in response to the class of equipment stored in the first field
3 receiving said command, said class of equipment outputs the attribute stored in the second field.

1 26. The apparatus of claim 21, wherein at least one attribute data record further includes a fourth
2 data field that stores data identifying a position of a chamber connected to the class of equipment
3 identified in the first field.

1 27. The apparatus of claim 21, wherein, for each attribute data record, the first field stores data
2 identifying at least one model of equipment.

1 28. The apparatus of claim 21, wherein, for each attribute data record, the first field stores data
2 identifying at least one version of equipment.

1 29. The apparatus of claim 21, wherein, for at least one attribute data record, the first data field
2 includes:

3 a first subordinate field that stores data identifying a model of equipment; and
4 a second subordinate field that stores data identifying a version of the model of equipment
5 identified in the first subordinate field.

1 30. The apparatus of claim 21, wherein, for at least one attribute data record, the first data field
2 includes:

3 first and second subordinate fields that store data that collectively identify a range of versions
4 of an equipment model.

1 31. The apparatus of claim 30, wherein the data stored in the first and second subordinate fields
2 respectively identify a first version and a last version in said range of versions.

1 32. The apparatus of claim 21, wherein, for at least one attribute data record, the first data field
2 includes:

3 first and second subordinate fields that store data that collectively identify a range of revision
4 dates of an equipment model.

1 33. The apparatus of claim 32, wherein the data stored in the first and second subordinate fields
2 respectively identify a first revision date and a last revision date in said range of revision dates.

1 34. The apparatus of claim 21, wherein the plurality of attribute database records stored in the
2 computer-readable data storage device include:

3 a first record including said first field, wherein the data stored in the first field of the first
4 record identifies a first class of equipment that includes a first model of equipment; and

5 a second record including said first field, wherein the data stored in the first field of the
6 second record identifies a second class of equipment that includes a second model of equipment
7 different from the first model.

1 35. The apparatus of claim 21, wherein the plurality of attribute database records stored in the
2 computer-readable data storage device comprises:

3 a first record including said first field, wherein the data stored in the first field of the first
4 record identifies a first class of equipment that includes a first version of a first model of equipment;
5 and

6 a second record including said first field, wherein the data stored in the first field of the
7 second record identifies a second class of equipment that includes a second version of said first model
8 of equipment, the second version being different from the first version.

1 36. The apparatus of claim 21, wherein, for at least one of the attribute data records, the attribute
2 identified by the data stored in the first field is a measurement of a process performed in a
3 semiconductor fabrication process chamber.

1 37. The apparatus of claim 21, wherein, for at least one of the attribute data records, the attribute
2 identified by the data stored in the first field is an operating condition of a process performed in a
3 semiconductor fabrication process chamber.

1 38. A diagnostic apparatus for monitoring electronic equipment, comprising:

2 a computer-readable data storage device in which a plurality of data records are stored,
3 wherein each data record includes:

4 a first data field that stores data identifying a class of equipment,

5 a second data field that stores data identifying an attribute whose value is outputted
6 by the class of equipment identified by the first field of that record, and

7 a third data field that stores data specifying a conversion parameter that defines a
8 conversion of the value of the attribute identified in the second field into physical units of
9 measurement; and

10 a computer connected to read data from the data storage device.

1 39. The apparatus of claim 38, wherein, for at least one of the attribute data records, the conversion
2 parameter stored in the third field specifies a physical unit of measurement.

1 40. The apparatus of claim 38, wherein, for at least one of the attribute data records, the conversion
2 parameter stored in the third field specifies a scale factor.

1 41. The apparatus of claim 38, wherein, for at least one of the attribute data records, the conversion
2 parameter stored in the third field specifies a range of physical values.

1 42. A data storage medium for storing data that describes one or more attributes of at least one class
2 of equipment, comprising:

3 a computer-readable data storage medium in which a plurality of data records are stored,
4 wherein each data record includes:

5 a first data field that stores data identifying a class of equipment,
6 a second data field that stores data identifying an attribute whose value is outputted
7 by the class of equipment identified by the first field of that record, and
8 a third data field that stores data specifying an ID which the class of equipment
9 identified by the first field of that record assigns to the attribute value identified by the second field
10 of that record.

1 43. A data storage medium for storing data that describes one or more attributes of at least one class
2 of equipment, comprising:

3 a computer-readable data storage medium in which a plurality of data records are stored,
4 wherein each data record includes:
5 a first data field that stores data identifying a class of equipment,
6 a second data field that stores data identifying an attribute whose value is outputted
7 by the class of equipment identified by the first field of that record, and
8 a third data field that stores data specifying a conversion parameter that defines the
9 conversion of the value stored in the second field into physical units of measurement.

1 44. A computer-readable data storage medium in which is stored instructions executable by a
2 computer to perform method steps for storing database records in a data storage device, wherein:
3 the method steps comprise the step of storing in a data storage device a plurality of attribute
4 data records; and

5 said step of storing each attribute data record includes:

6 storing in that record a first field identifying a class of equipment,

7 storing in that record a second field identifying an attribute whose value is outputted
8 by the class of equipment identified by the first field of that record, and

9 storing in that record a third field specifying an ID which the class of equipment
10 identified by the first field of that record assigns to the attribute value identified by the second field
11 of that record.

1 45. A computer-readable data storage medium in which is stored instructions executable by a
2 computer to perform method steps for storing database records in a data storage device, wherein:

3 the method steps comprise the step of storing in a data storage device a plurality of attribute
4 data records; and

5 said step of storing each attribute data record includes:

6 storing in that record a first field identifying a class of equipment,

7 storing in that record a second field identifying an attribute whose value is outputted
8 by the class of equipment identified by the first field of that record, and

9 storing in that record a third field specifying a conversion parameter that defines a
10 conversion of the value of the attribute identified in the second field into physical units of
11 measurement.